

under which they grow, should be carefully studied. In order to do this much more good material is needed from all over the continent. It is very desirable to collect repeatedly, throughout the year, at favorable places, wherever there is an opportunity for doing so; it is essential to have the date of collecting with every lot, notes on the nature of the habitat, and last but not least, to have good numbers of specimens, not only the large ones, but also the half-grown and young. Any material, from anywhere, will mean a contribution to our knowledge.

It may be added that the simplest and best means for collecting small fresh-water mollusca, Sphæriidæ and gastropods, is a sack net of good burlap on a frame of strong wire ( $\frac{1}{5}$ - $\frac{1}{4}$  inch), the ring of about 6-8 inches diam., tied to a handle of suitable length, *e. g.*, a broomstick. In this net mud and other material, scooped up from the surface of the bottom, is washed, the coarser things gradually removed; the remainder is taken home and dried well, but not in too great heat. Then, a small sieve, *e. g.*, a strainer, or several of different mesh measures, are very serviceable for separating finer and coarser material, and it will be much easier to pick out the specimens, of which the smallest should not be overlooked; some *Pisidium* are not larger than 1 to 2 mm. when mature. Specimens to be sent for examination are best left mixed up, or separated only for considerable differences of size. The washings and specimens must be handled carefully, especially *Musculium*, since most of them are very fragile. The whole "stuff," dirt and all, fresh or dried, may be sent for examination, after the coarser materials are removed.

For deep water a drag-net or small dredge of burlap will do good service, especially if protected by an outer sack of strong canvas with the bottom left open. It is very desirable that collecting be done in lakes and deep rivers.

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#### DESCRIPTION OF A NEW FOSSIL LYMNÆA.

BY F. C. BAKER.

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LYMNÆA NASHOTAHENSIS n. sp.

Shell elongated, somewhat pyramidal; surface dull, growth-lines conspicuous, crossed by fine, impressed spiral lines; whorls 6-6 $\frac{1}{2}$ , rather rapidly increasing in diameter, flatly rounded, the body whorl very large and quite convex or even gibbous; spire broadly pyramidal or conic, longer than the aperture; sutures well marked; aperture

long, ovate, much narrowed above, generally wide and flaring below; outer lip with variceal thickening; inner lip rather broad, reflected over the umbilical region, forming a conspicuous expansion and leaving a well-marked umbilical chink; parietal callus wide and rather thick, in some specimens rendering the aperture continuous; axis twisted; the columella is plicate in the immature shell, but in adult or old specimens the inner lip is raised over the umbilicus, somewhat as in *emarginata*.

Length 33.50, breadth 13.00; aperture length 14.00, breadth 7.00 mm.

Length 29.00, breadth 13.00; aperture length 15.00, breadth 6.75 mm.

Length 28.75, breadth 13.50; aperture length 15.75, breadth 7.00 mm.

Length 25.00, breadth 12.00; aperture length 14.00, breadth 7.25 mm.

Length 21.00, breadth 10.00; aperture length 12.00, breadth 6.00 mm.

Length 24.00, breadth 10.00; aperture length 11.00, breadth 5.00 mm.

Length 18.25, breadth 8.25; aperture length 10.00, breadth 4.25 mm.

Types: The Chicago Academy of Sciences, 9 specimens, No. 24539; cotypes, Academy of Natural Sciences, Philadelphia, No. 98521, 6 specimens.

Type locality: Marl beds, Nashotah, Waukeshaw County, Wisconsin.

Remarks: *L. nashotahensis* was at first thought to be a form of *Lymnæa danielsi*; it differs markedly from that species, however, in several particulars—the spire is broader and not so acute, the body whorl is larger and inclined to be gibbous, there is a conspicuous umbilical chink (*danielsi* is usually imperforate), and the columella is not noticeably plicate. In *nashotahensis* the aperture is elongate ovate, narrowed above and broadened below, where it is often patulous. The upper whorls are strongly suggestive of *Lymnæa reflexa*, the penultimate whorl having the swollen appearance so characteristic of *reflexa*.

Young specimens somewhat resemble *Lymnæa catascopium*, differing in being narrower, with a more elongate aperture, longer and less

rounded whorls and a less distinctly plicate columella. There is also an umbilical chink, which is usually absent in *catascopium*.

Like Walker's *Lymnæa bakeri* from Michigan, *nashotahensis* is apparently an extinct species peculiar to marl deposits. The specimens were secured by Mr. F. M. Woodruff.

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NOTES ON PLANORBIS II: P. BICARINATUS.

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BY BRYANT WALKER.

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(Concluded from May Number.)

IX. Miscellaneous.

In Beck's Index Moll. (1837), p. 118, the following synonymy of this species is given:

"*Planorbis bicarinatus* Say. Am. Sepr. C. C.

a. major. S. g. iv, 4. W. S. vii, 12. Fl. Schuylkill.

*Pl. angulatus* Wood.

b. minor.

an *P. eburneus* Ch. ix, 1123? New Jersey."

*P. angulatus* Wood, Index Testaceologicus, edit. II, 1828, Suppl., pl. 7, f. 12, is a typical *P. bicarinatus*. The figures in Sowerby's Genera, referred to by Beck (as "S. g.") are the same species.

Beck defined his *minor* only by a queried reference to Chemnitz's figures of a West Indian species, really entirely different.

DISTRIBUTION.

The recorded distribution of *Planorbis bicarinatus* is shown with approximate exactness upon the accompanying map (pl. III). These data are primarily based upon the collection of the Philadelphia Academy, the complete list of which has been kindly furnished by Dr. Pilsbry. To these have been added such additional information as was afforded by my own collection. The localities thus vouched for are indicated on the map by the black dots. These data have been supplemented by such specific localities as a careful search of the literature at my command afforded. These citations are represented by the outlined dots. Duplicate citations and those giving simply the "State" have been omitted. A detailed list of all localities and the authorities for the same is given below. The map does